PREDICT EPHEMERAL AND PERENNIAL RANGE QUANTITY AND QUALITY DURING NORMAL GRAZING SEASON

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16. Abstract

Very little progress has been made during this 6-month reporting period. Imagery was not obtained during the growing season for BLM test sites as a result of the late launch of the ERTS-1 satellite. Imagery received has been of poor quality because positive transparencies are over-exposed. Imagery has not been received in its most usable form to the Principal Investigator. Because of constraints of lack of equipment, difficulties of travel to equipment and high cost of photographs, much time has been spent trying to produce usable imagery. Imagery received during the next reporting period will contain data for growing seasons on all test sites. This will be our first opportunity to view usable data. It is very important that we receive data in requested formats.

17. Key Words (Selected by Author(s))

Desert
Growing season
Over-exposed

18. Distribution Statement

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Type II Progress Report
ERTS-A

a. Title: Predict Ephemeral & Perennial Range Quantity & Quality During Normal Grazing Season

ERTS-A Proposal No.: SR 147

b. GSFC ID No. of P.I.: IN 417

c. Statement and explanation of any problems that are impeding the progress of the investigation:

Receipt of imagery from NASA and in a usable form has been a continuing problem during this 6-month period. During the first two months I received no data at all. During the second 2-month period I received one frame for each of three sites and no data for the Alaska site. All data missed the growing season for all sites. Comparison of periodic data was impossible where only one frame was received per site.

Analysis of imagery made during the second and third 2-month periods has yielded little usable information for the following reasons. Imagery taken of the deserts in Arizona and California and semi-arid southeastern Oregon has been of poor quality. Because of high reflectance of light from baren desert soils, imagery is over-exposed and positive transparencies are washed out. Imagery was also taken when plants were dormant so that differences in vegetation growth and development as exhibited by changes in tone of color infrared are nonexistent.

Imagery for the Alaska test site was inadvertently left out of the computer by NASA. Therefore, no imagery of that site was received until last week (December 26, 1972).

Only 70 mm positive transparencies have been sent me by NASA, although my original order also asked for 242 mm positives. My only means of producing a usable product from 70 mm positives has been a densitometer and the I^{2}S combiner-viewer. I have found both methods to be very poor. The densitometer yields little useful data because differences in density on the positives are very slight. So far I have only been able to distinguish between mountains and valleys, something I could do visually. The I^{2}S does a very poor job of registering 70 mm chips. Combined images are washed out because of over-exposed positives. I find the product gained by photographing the video screen to be further degenerated through the photographic process.

I have purchased 242 mm positive transparencies from Sioux Falls but find these to be even more washed out than the 70 mm positives. 242 mm positives from NASA must be of better quality or I will be in trouble.

d. Discussion of the accomplishments during the reporting period and those planned for the next reporting period:

I have been told by other Principal Investigators that 242 mm positives are easy to work with and provide usable data. I have readied two processes for combining this imagery once I receive 242 mm positives from NASA. These are:

1. Diazo process of producing color composites from 242 mm positive transparencies.

2. Color composite from 242 mm positive transparencies using a camera capable of triple exposure and a variety of filters.

During the next reporting period critical growing seasons for the desert (winter - February through April and summer - August through September), Oregon plains (spring/summer - April through June), and Alaska (June - August) will occur. It is extremely important that I receive usable data every 18 days during these seasons. Imagery from NASA will be combined to produce color composites which will be analyzed to determine if ephemeral forage production can be mapped, if potential production can be predicted, if effects of livestock grazing can be monitored, and whether vegetation in Alaska can be mapped. Satellite imagery will be compared with ground truth data and imagery from the U-2 and low-level flights.

e. Discussion of significant scientific results and their relationship to practical applications or operational problems including estimates of the cost benefits of any significant results:

None at present.

f. A listing of published articles, and/or papers, pre-prints, in-house reports, abstracts of talks, that were released during the reporting period:

None.

g. Recommendation concerning practical changes in operations, additional investigative effort, correlation of effort and/or results as related to a maximum utilization of the ERTS system:

I recommend that ERTS-1 continue to produce data through August 1973 and longer if possible so that investigators can get seasonal patterns and hopefully monitor changes from fall of 1972 through fall of 1973.

I also recommend that NASA make a closer determination of the specific data needs of each Principal Investigator and make this data first priority before processing imagery for other purposes.

h. A listing by date of any changes in Standing Order Forms:

10-12-72 Requesting an increase in season of coverage (late launch) and amount of cloud cover acceptable.

10-31-72 Requesting black and white paper prints in 2 bands.

11-07-72 Included California sites.

11-13-72 Asked for 242 mm positive transparencies - I am receiving none.

i. ERTS Image Descriptor forms:

None.

j. Listing by date of any changed Data Request forms submitted to Goddard Space Flight Center/NDPF during the reporting period:

No changed Data Request Forms were submitted. However, I did submit several DR forms for data I need but am not receiving. These areas follow:

10-12-72 Data found in Standard Catalog which appeared to be useful, B/W and color.

10-31-72 B&W prints and color composites of data I received as 70 mm positive transparencies.

11-07-72 Data found in Standard Catalog which appeared to be useful.

k. Status of Data Collection Platforms (if applicable): N/A

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cc:
WO, 420
WO, 510